Calvert Cliffs Nuclear Power Plant

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657

CENG
a joint venture of
Constellation Energy EDF

CALVERT CLIFFS
NUCLEAR POWER PLANT

January 25, 2013

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317
Request for Additional Information Regarding Spring 2012 Steam Generator Tube Inspection Results

REFERENCE: (a) Letter from N. S. Morgan (NRC) to G. H. Gellrich (CCNPP), dated January 4, 2013, Calvert Cliffs Nuclear Power Plant, Unit No. 1 – Request for Additional Information Regarding the 180-Day Steam Generator Report from the Spring 2012 Refueling Outage (TAC No. ME9439)

As requested by Reference (a), attached is additional information concerning our Spring 2012 steam generator tube inspection results.

Should you have questions regarding this matter, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

James J. Stanley
Manager-Engineering Services

JJS/PSF/bjd

Attachment: (1) Request for Additional Information Regarding the 180-Day Steam Generator Report from the Spring 2012 Refueling Outage

cc: N. S. Morgan, NRC
W. M. Dean, NRC
Resident Inspector, NRC
S. Gray, DNR

A001
NRR

ATTACHMENT (1)

REQUEST FOR ADDITIONAL INFORMATION REGARDING THE 180-DAY STEAM GENERATOR REPORT FROM THE SPRING 2012 REFUELING OUTAGE

Calvert Cliffs Nuclear Power Plant, LLC
January 25, 2013

ATTACHMENT (1)

REQUEST FOR ADDITIONAL INFORMATION REGARDING THE 180-DAY STEAM GENERATOR REPORT FROM THE SPRING 2012 REFUELING OUTAGE

By letter dated January 4, 2013 the Nuclear Regulatory Commission (NRC) requested additional information based on their review of the results of the steam generator (SG) tube inspections conducted at the Calvert Cliffs Nuclear Power Plant, Unit No. 1 during the spring 2012 refueling outage. The requested information is provided below.

RAI 1:
Please provide the results of the tube plug and secondary side inspections performed.

CCNPP Response to RAI 1:

A. Tube Plug Inspections

The tube plug inspections were performed and both the hot leg and the cold leg sides were inspected. There was only one prior tube plug installed (SG11, R8-C130) and it was found to be acceptable from both the hot leg side and the cold leg side.

B. Steam Drum Upper Internals

The steam drum components viewed above the primary separator deck were all coated with a uniform film of deposit material which was not very easily disturbed. All structural welds and components viewed were sound and intact with little to no erosion or corrosion on any major welds. No signs of erosion or corrosion were noted on any of the steam water separation components viewed. The primary separator outlet flow arms and vent holes viewed were clear and open with sharp clean edges and no signs of erosion.

The area above the secondary separator deck was viewed and a sampling of all major components obtained. Twelve of the secondary separators were inspected and found to be in good condition. The bottom plate in the secondary separators was found to have a rough texture that was not easily noticed with the video camera. When rubbed by the gloved hand the roughness was described to be a slight deposit, not erosion. The outlet side of the secondary separators viewed appeared normal with only a minor amount of corrosion product covering component surfaces. The secondary outlet vanes exhibited no signs of erosion and had clean sharp edges.

The steam venturis and the structure supporting them were sound and intact. In SG11 one of the steam venturi fasteners was found to be loose and was subsequently tightened. No other venturi nuts were observed loose in either steam generator. Minor flow staining was noted on some surfaces of the venturis. The deck support skirt and weld were sound and intact, however, several areas viewed contained some corrosion product build up on the weld surfaces.

A camera was used to view the feedring and some J-nozzles. Lack of water clarity inhibited clear viewing underwater but all components and welds viewed in this region appear sound and intact. All surfaces were coated with a light uniform coating of deposit material. No signs of erosion or feedwater overspray were noted in the area viewed. The feedring support bracket viewed appeared normal with no signs of relative movement between the feedring piping and the bracket.

Inspections of the U-bend support structure and outer row tubes were performed. Views in this region showed structurally sound supports and welds. Tube deposit, film thickness and colorization appeared to vary along the span of the U-bends, with deposits visibly heavier closest to the support structures. The fan bar supports and the overturn restraints viewed in both generators were all structurally sound with a uniform crystalline deposit.

The underside of the primary separator deck and several separator riser tube-to-deck welds were viewed and in both steam generators all appeared in good condition with a slightly granular deposit coating. The underside of the primary deck contained this same granular deposit.

C. Top of Tubesheet Inspection

Before sludge lancing was performed, inspections of the No-Tube Lane (NTL), annulus, and 3 inner bundle passes of both hot and cold legs were performed at the top of tubesheet in both SGs. These inspections were performed in order to characterize sludge deposits. The annulus and the NTL exhibited a fairly uniform layer of sludge less than 1/8" deep. In-bundle at the top of tubesheet in both SGs showed loose sludge deposits with a mostly granular consistency. Some sludge and flake/tube scale formations were noted deep in-bundle.

Water lancing was performed in both SGs.

Post-water lancing inspections were performed. There was a light dusting of loose deposit in the annulus and at the peripheral tubes. This was most likely a result of fill and drain operations. The tubesheet blowdown holes were found to have sharp edges, showing no sign of erosion. Views inside the holes revealed no foreign objects. No measurable sludge was seen in the NTL. The inner bundle tubesheets were inspected in both SGs to determine deposit conditions. Multiple passes were made in the cold legs and hot legs along the top of tubesheet. The bottom of the first lattice support was inspected showing mostly clean conditions. The tube surfaces had a fairly uniform thin film of deposit but looked clean. All lattice support and shroud support components observed appeared structurally sound and in good condition. The tube / lattice bar intersections looked mostly clear with occasional minor bridging noted. Shroud support bracket weldments and lattice ring backing bars viewed were in good condition.

RAI 2:

In the Calvert Cliffs 2008 180-day SG report (ADAMS Accession Number ML082130158), a total of 324 fan bar wear (FBW) indications were reported. Similarly, for the spring 2012 outage, a total of 465 FBW indications were reported, with 143 newly reported FBW indications for the outage. When adding together the total number of FBW indications reported from the previous inspection (324) with the newly reported FBW indications from the spring 2012 inspection (143), the total FBW indications for Calvert Cliffs would be 467. Please provide clarification on the total number of FBW indications identified for the Calvert Cliffs SGs.

Please provide clarification on the total number of FBW indications identified for the Calvert Cliffs SGs.

CCNPP Response to RAI 2:

Two of the FBW indications from 2008 were not detected in 2012. So, that leaves 322 FBW indications that could be repeated from 2008 and 143 new FBW indications discovered in 2012 for a total of 465 FBW indications reported in 2012. One possible reason for the two FBW indications that were not repeatable is that they may have been at the threshold of detection in 2008.